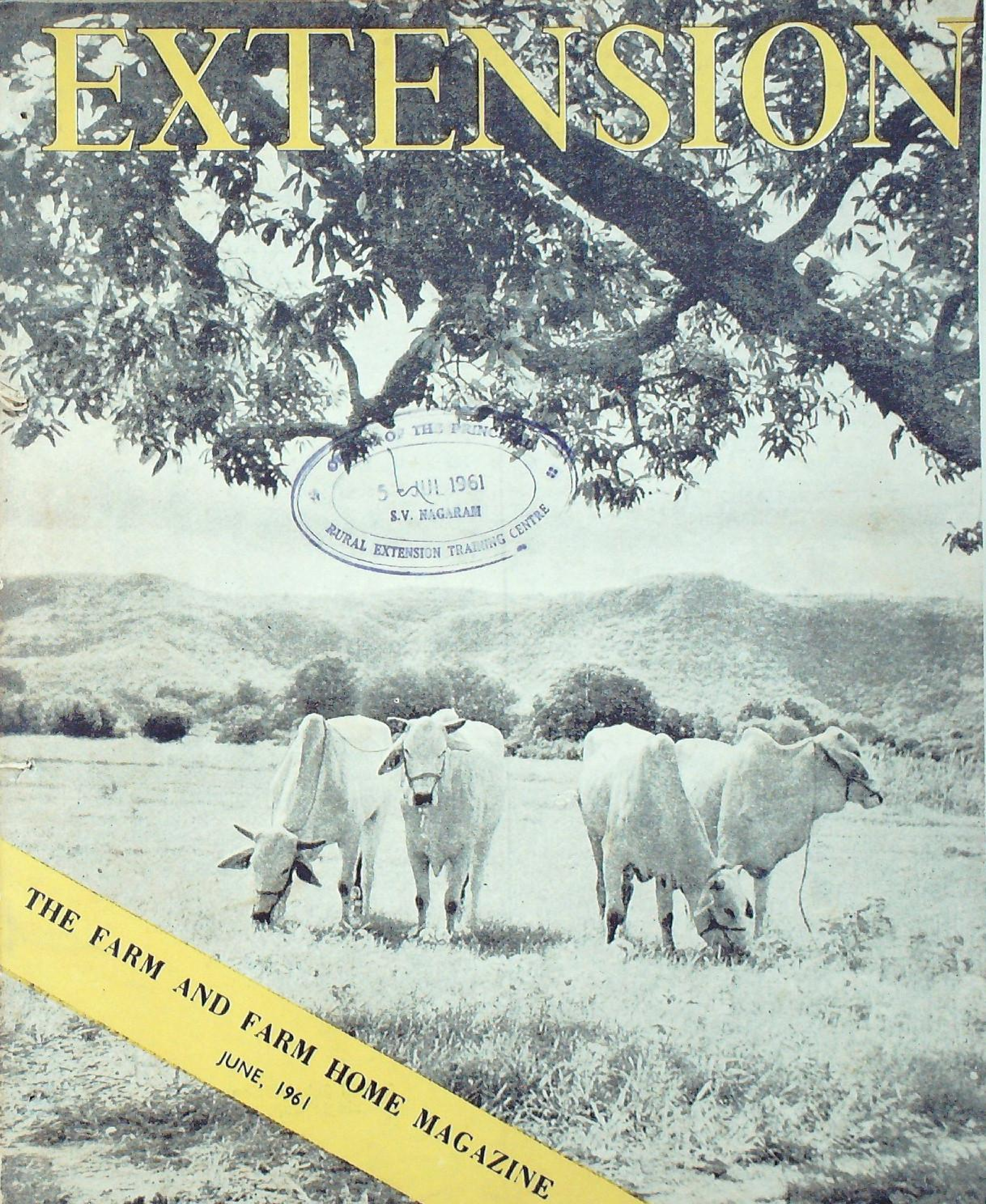
EXTENSION



OF THE PRINC
5 JUL 1961
S.V. NAGARAM
RURAL EXTENSION TRAINING CENTRE

THE FARM AND FARM HOME MAGAZINE

JUNE, 1961

OUR COVER PICTURE

Of the 69.7 million work animals in our country, how many can size up to these four in the picture? There's a stamp of good breeding on them. You too can own such animals if you breed from bulls that have a record of producing good off-springs. These days Artificial Insemination Centres make it easy for you to breed your animals to the best bulls.

—Photo by Gurcharan Singh

EXTENSION

THE FARM AND FARM HOME MAGAZINE

June, 1961 Vol. I No. 12

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Principal Editor	M.G. Kamath
Editor	T.C. Roy
Associates	Lal Karamchandani
	Sham Govind Ranade
	Shukla Das
Art Editor	Pratap Deb
Business Manager	R.D. Khanna

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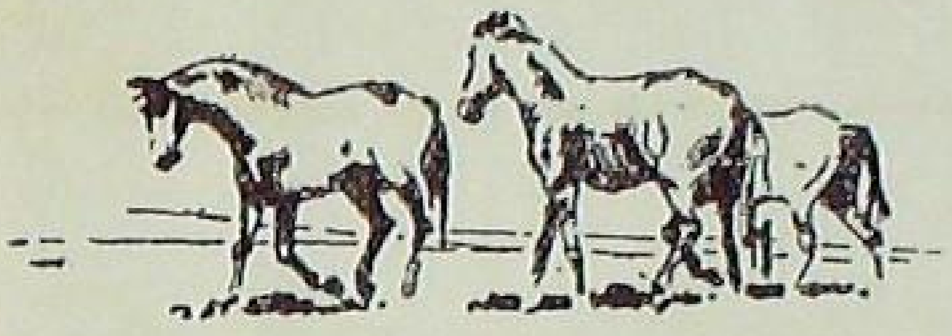
THE SICKNESS THAT KILLS HORSES



HORSES most, mules less and donkeys least—this is how the South African Horse Sickness hits. When the disease strikes the animals, there is no treatment that can save them.

South African Horse Sickness, though listed under the scheduled diseases in our Contagious Diseases Act, was practically unknown till last year when a large number of animals died of the disease.

The disease is brought to the animals through the bite of sand-fly-like insects which are seen in large numbers during the warmer rainy months, and the disease itself is caused by a 'virus.'

Horse Sickness may affect the respiratory tract or heart of the animal or both. Symptoms depend upon the organs attacked. Where the respiratory tract is involved, the animal gets temperature, finds it difficult to breathe, puts out a frothy discharge from the nostrils. Death is sure within 36 hours. This is the most dangerous type.

When the heart is affected, there is a slight fever, and heart action is futile. A swelling is found on the forehead, temples and lower jaw, which may spread to the brisket and forelegs.

When both heart and lungs are affected, it is called the mixed form of Horse Sickness. This is the most common form in our country.

The only way of preventing the animals from getting Horse Sickness is to get them vaccinated against the disease. Vaccinated animals develop immunity against the disease within three weeks and get complete immunity in three months. However, you must get the animals vaccinated every year.

If you get your horses vaccinated in March-April, they will get the immunity before the rains start.

PREVENTION

Since with some care you can prevent your horses getting the sickness, you should

- keep horse stables and the surroundings clean ;
- groom the horses regularly;
- move the horses to highlands and away from ponds and pools during the rainy season ;
- keep the horses away from pastures in the evenings ;
- keep them in the stables and feed them there;
- give nutritious feeds to the horses, so that they may be strong enough to resist the disease.

Since there is no treatment for the disease, it is better to destroy the animal suffering from the disease. Carcasses of the dead or destroyed animals should not be flayed, and be burnt or buried—six feet deep with at least one foot layer of active lime below and above the carcass.

When Horse Sickness is detected, better report to the nearest Government Officer or your *panchayat*.

YOU SHOULD BE INTERESTED IN PEPPER

IF you are living in an area where pepper is grown, you should also grow pepper. If you are already having a few pepper vines, you should go in for more this planting season. Because, pepper is a paying spice. Pepper prices are high and pepper-growing is one good way of increasing your farm or backyard income.

We need to have more pepper growing on our hills and hill-slopes, in gardens and house compounds as we need to export more pepper to earn more foreign exchange.

If you can, grow pepper as a pure crop trailing on *Erythrina* ; if you cannot, grow it as a mixed crop with mango, jack, coconut, arecanut and such other trees as standards or supports.

A pepper vine can be male or female or bisexual (flowers of both sexes on the same vine). Avoid the first two for planting ; plant the third type for regular and high yields.

Rooted cuttings of pepper are being raised in pepper nurseries by your State Government. These cuttings are from bisexual pepper plants, and give the best results. Your Block Development Officer (or Agricultural Officer) will be able to help you get these cuttings at cheap rates.

Plant two cuttings per standard. Plant them in pits of 1½ feet cube spaced 12 feet apart in case you want to raise a pure crop or grow one variety.

Plant on the northern side of the slope to avoid the sun. You can take up the planting work from July to September, but July is the best month for planting.

To get a good yield, you must manure the vines.

In March-April, that is, before the south-west monsoon starts, apply a basketful (ten pounds) of cattle manure or compost per vine. Apply two ounces (a cigarette-tinful will be four ounces) of ammonium sulphate along with the cattle manure. Also give half a pound of groundnut cake per vine.

In October-November, before the north-west monsoon sets in, apply two to four ounces of muriate of potash and an equal quantity of superphosphate or bonemeal. Give four ounces of slaked lime to each vine, once every two years.

Excepting for the slaked lime, give the fertilizers a foot away from the stem of the vine, all around and at a depth of about six inches. The fertilizers can be nearer the stem for young plants and away for older plants.

Slaked lime can be applied closer to the vine and well mixed with the soil.

Keep the garden weed-free. Give two diggings, once before and once after the south-west monsoon.

Keep watch for pests and diseases.

A beetle causes the *pollu* or 'hollow berries' disease. Occurrence of *pollu* will mean a loss of even 30 per cent of the crop in some cases. You can control the beetle by spraying 0.1 to 0.2 per cent of DDT in early July and once every 15 days thereafter.

Pepper also suffers from a disease called 'wilt.' The plant gets the disease when the soil is shallow or has rocks below or when it is poor in fertility or is water-logged.

To control the disease, apply slaked lime to the root area on a rainy day. You can do it even on a day in the non-rainy season, provided you water the vines afterwards. If the disease is very severe, you have to pull out the diseased plants and burn them.

If you are in Mysore or Kerala States, the Pepper Development Officer and his staff will be able to help you with your pepper problems. In other States, the State Horticulturist or the Agricultural Officer will give you all the information you need on growing pepper.

WHILE a large number of our farmers grow *jowar* (*cholam*) as a *kharif* crop or as a *rabi* crop, under either irrigated or rainfed conditions, the yields most of them get are low.

But with good farming methods, *jowar* can give a high yield. Farmers can raise a good crop of *jowar* even in places where the rainfall is as low as 20 inches.

Jowar is mainly a crop of the plains. It

Get better yields from JOWAR

By V.M. CHAVAN and G.P. ARGEKAR

comes up well in a good many types of soils, though you can raise the best crop in a well-drained red or black clay loam.

Jowar feeds on the surface. Hence it pays to prepare the land well.

KHARIF JOWAR

PREPARING THE LAND

Loosen the soil to a depth of three to four inches by harrowing the field three or four times.

If need be, you may also plough the land just after harvesting the previous crop—in December, January or February; or in April or May, as soon as the early rains soften the soil. Plough the land once or twice in such cases, and work the harrow once.

Apply compost or cattle manure to the soil. Plough or harrow to mix it well with the soil. If your's is an irrigated crop, apply more manure.

In black cotton soils, give a light ploughing in February-March; next a deep ploughing. Harrow with a blade-harrow after the first rains. Clean the field by collecting crop stubbles, apply cattle manure or compost, then harrow again.

TREATING THE SEED

To prevent smut disease later, better treat the *jowar* seed with 300-mesh sulphur powder. Use an ounce of the powder for every 10 to 15 pounds of seed. Use a seed-dressing drum or *ghara* or tin for mixing.

SOWING

Sow *jowar* in lines, using a plough or drill. Usually a three-coultered drill with a distance of 13 inches between the coulters is used. Spacing varies from place to place, but ask your Gram Sevak or Agricultural Officer for the spacing suitable in your area.

In the Poona (Maharashtra) method, the seed is drilled 18 inches apart in a lighter soil and 24 inches apart in a heavier soil. Or, the seed is dibbled, with eight to ten seeds at each place.

After sowing, work a heavy plank to make the seed-bed firm.

IMPROVED VARIETIES

In each State, the Department of Agriculture distributes seeds of improved varieties to farmers. These varieties yield higher than local ones. Make it your habit to sow only an improved variety in your field.

You will need eight to ten pounds of seed to sow an acre.

THINNING

Weak seedlings in the field only lower the yield. Hence, thin out such seedlings early, within the first 10 to 15 days of sowing. Follow up with a second thinning a week after the first. In a drilled field, see that the plants are finally spaced 9 to 12 inches, and if it is a dibbled crop, leave only three to four seedlings at each hill.

MANURING

It pays to apply 20 pounds of nitrogen to a rainfed crop and 40 pounds to an irrigated crop. Apply a third of this at the second thinning and the rest after 1½ months.

Also apply 200 pounds of superphosphate. If you are using an organic fertilizer like groundnut cake to supply nitrogen, you can reduce the superphosphate to 60 pounds, and apply it at the time of sowing in one dose. This you can apply either by drilling or by mixing with compost or farmyard manure, in furrows. Oilcake should be applied separately.

INTERCULTIVATION

Intercultivate the crop after each thinning.

For a rainfed crop, two or three intercultivations are needed in light and medium soils.

For an irrigated crop, intercultivate after each irrigation.

Watch out for the 'striga.' This is a parasite plant. Destroy it whenever it appears in the field. You can use a hand-hoe for the work.

IRRIGATION

Give water to the crop once every 15 to 20 days, excepting during the rains.

GROWING A CROP-MIXTURE

It is a good practice to grow a crop mixture. You can grow *jowar* with *tur* (pigeon pea), *mung* (green gram), *urd* (black gram), *moth* (kidney beans) or cowpea. Being legumes, they help increase the fertility of the soil.

A crop-mixture brings better profits than *jowar* grown alone.

Grow *jowar* and the legume you choose in strips. Next year, grow *jowar* on the strip you grew the legume on, and the legume on the strip which was under *jowar*. You will need about three to five pounds of seed per acre.

RABI JOWAR

PREPARING THE LAND

For a rainfed crop, plough the land once in three years.

In medium and heavy soils, no ploughing is needed if the land is free of weeds.

Harrow twice or more during the rainy season. This will help the soil to keep moisture and keep down weeds.

Before the heavy rains set in in September, use the 'soil scooper' to make depressions or hollows in the soil. You can also use the blade-hoes you use for interculture after covering the space between the prongs with a tin plate. Lift and press the hoe alternately as it works in the field. The hollows help in collecting the rain water.

Apply farmyard manure or compost at five cartloads per acre (in the year when you plough the land) to improve the condition of the soil. Spread it uniformly and mix it well with the soil.

Under the intensive method of growing *jowar*, you leave the field fallow in *kharif*, and harrow it from time to time to keep down weeds. Run a heavy plank to smoothen and press the soil. Run an 18-inch marker along and across the field to mark the places for sowing the seed.

SOWING

At each place where the lines cross, scatter eight to ten seeds in a circle with a diameter of five to six inches. Push aside the top soil at these places to 1½ to 2 inches, exposing the moist soil, distribute the seed, and cover.

You will need 10 to 12 pounds of seed per acre for sowing in this manner.

THINNING

As with *kharif jowar*, thin the seedlings 15 days after sowing, when you have four to five seedlings per hill. Thin again a week later to leave only two seedlings at each place. These should be as far apart from each other as possible. Thinning should be over within one month after sowing.

TOP-DRESSING

Where irrigation is possible, apply 40 pounds of nitrogen and 20 pounds of phosphoric acid per acre around the hills. Apply the nitrogen in two equal doses—one after the last thinning and the second a month later—and all the phosphoric acid with the farmyard manure that you apply, or along with the first dose of nitrogen. Irrigate after each application of fertilizer.

When you grow *rabi jowar* under dry conditions, no fertilizer need be given.

INTERCULTURING

Follow each thinning with an interculture. Give two more when the soil cracks or turns weedy. Otherwise two good interculturings will do.

DRILLED CROP

If you want to drill your crop, use an 18-inch seed-drill, when the soil is moist You will need 10 to 12 pounds of seed for sowing an acre. Thin the crop twice to give a spacing of 8 to 9 inches at the first

thinning and about 12 inches at the second. Follow each thinning with an interculture. Apply the same dose of fertilizer as for a dibbled crop. The fertilizer mixture can be drilled in between the lines of *jowar*.

HOT WEATHER JOWAR

When you want to raise an irrigated crop of hot weather *jowar*, plough and harrow the land to bring it to a good tilth. Use five to ten cartloads of cattle manure per acre. After mixing the manure with the soil, irrigate. You can also use 100 to 120 pounds of superphosphate and 100 pounds of ammonium sulphate per acre before sowing. Four to five weeks after sowing, top-dress the crop with a 100 pounds of ammonium sulphate.

Sow the seed in the plough furrows, a foot apart. Level the field, prepare long narrow beds, six feet wide and with raised borders. Open channels across the beds at suitable intervals, and irrigate once in eight to ten days.

Follow the same operations as have been mentioned for *rabi jowar*.

FODDER JOWAR

You can raise a good fodder crop of *jowar* under irrigation during the hot weather. Select a good variety with juicy stalks. Sow thick, using 40 pounds as seed-rate in rows spaced 12 inches apart.

Harvest at flowering stage.

PESTS AND DISEASES OF JOWAR

Striga is a root parasite of *jowar*, which reduces the yield of the crop. It does more damage in lighter soils. Repeated weedings can prevent its spread. Spraying with 0.1 per cent solution of any 2, 4-D preparation like 'Fernoxone' at 100 gallons per acre can control it.

JOWAR STEM BORER

The following are some of the more important pests and diseases of *jowar*. Take up control measures as soon as you notice them in the field.

This dirty white caterpillar bores into the stem, killing the tender central shoot (dead heart). You can also see holes in the other parts of the plant.

Control : Pull out the plants showing dead hearts and destroy immediately ; collect the stubbles of the crop after the harvest and burn; store *jowar* fodder after cutting it into smaller pieces.

ARMYWORM

The armyworm (smooth, stout and dull greenish caterpillar) eats away the foliage at night. Moths lay circular eggs on the central leaves in parallel rows.

Control : Collect and destroy the eggs ; dust in the evenings with 5 to 10 per cent BHC at 20 to 30 pounds per acre, or spray with 50 per cent BHC wettable powder, one pound in 25 gallons of water.

DECCAN WINGLESS GRASSHOPPER

It can completely eat away your crop. Dust with 10 per cent BHC at 20 pounds per acre, or spread poison baits made with 10 pounds of 50 per cent BHC and 90 pounds of rice husk or groundnut husk previously soaked in water for 6 to 8 hours.

HAIRY CATERPILLAR (*KATRA*)

It feeds on the young crop. Dust with a mixture of sodium fluosilicate and inert dust (1 : 6) at 25 to 30 pounds per acre.

THE EAR BUG

A yellowish green bug sucks the sap from the shoot and the ear of *jowar*. Dust 5 to 10 per cent BHC at 20 pounds per acre.

GRAIN SMUT AND LOOSE SMUT

In grain smut, the grains in the ear develop into dirty grey sacs about double the size of the normal grain, containing a black powder. In loose smut, plants get stunted. Loose long sacs develop instead of grain. These sacs are full of loose powdery spores which are easily blown away.

Since both the diseases are carried by the grain, dress the seed before sowing with fine powdered sulphur at four ounces for every 60 pounds of seed.

HEAD SMUT

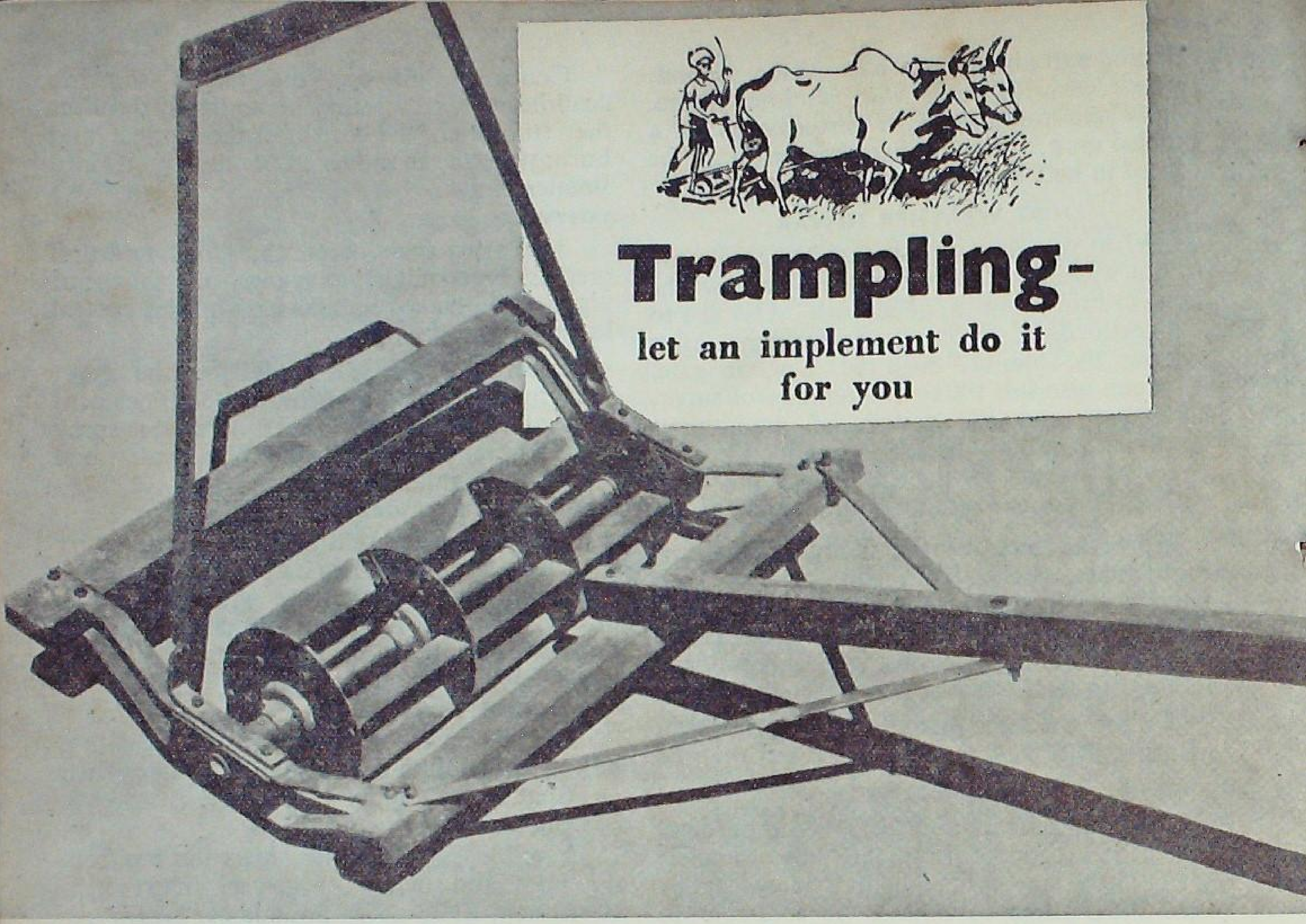
An infected ear appears in the place of the healthy ear. Remove all infected plants as soon as the disease is noticed, and destroy.

DOWNY MILDEW

Diseased plants show narrow pale yellow leaves covered with a white downy material on them or show yellow or brown streaks. Remove and destroy such plants.

Trampling-

let an implement do it for you



The green manure trampler makes the job easy and efficient, and at half the usual cost

By D. N. KHERDEKAR

WITH as little as Rs. 65, you can solve your problem of burying green manure in your paddy fields, especially where you are unable to get the labour needed for it.

For, with this money, you can buy a green manure trampler. There are two types available in the market for you to select from.

Both the tramplers were developed in Madras State, and are popular with the farmers there. One such model is described here.

Weighing only 77 pounds, this trampler is simple in its construction. It has ten-inch (diameter) steel discs with cast iron hubs mounted on a horizontal pipe shaft and has horizontal blades around the shaft.

You can work the trampler with a pair of bullocks. When you spread the green manure over the field and draw the trampler, its blades press the green material into the puddle two to three inches deep.

You can cover about three acres a day easily with the implement. And it will cost you only half of what you would spend on labour to do the same job.

The Agricultural Engineer of your State would be able to order this implement for you.

RAVINES
and what to do about them

WHERE there should have been five million acres or more of good farmland, there are today deep ravines in our country. Some of these, with almost vertical sides, are 50 to 100 feet deep. The ravines are mostly to be seen on the banks of our rivers.

The ravines tell a story of neglect. In the water-shed areas of the rivers, where the soil is deep alluvium, not enough steps were taken to conserve soil in the farmlands. Uncontrolled grazing and thoughtless cutting of trees only helped further erosion. Extending the cultivation right up to the bank of the river or *nallah* without planting border strips of grasses or trees made the situation worse.

Water running off on the surface from the water-shed and the flood waters from the rivers then did the rest, singly or together, and made the deep ravines.

On a rough estimate, 3.5 million acres of land on the banks of the Jamana in Uttar Pradesh and another million acres on the banks of the Chambal in Madhya Pradesh and Rajasthan have been thus affected. Ravines are also seen on the banks of the Sabarmati, Mahi, Warrah and Mahuva rivers in Gujarat.

The problem of ravines is serious. A recent survey in certain areas in Madhya Pradesh showed that in seven years' time,

15,000 acres of fertile farmland had been converted into ravines. To find a solution to these problems, research is being conducted in three stations set up in Agra (Uttar Pradesh), Vasad (Gujarat) and Kotah (Rajasthan). These stations are trying to evolve suitable methods for reclaiming the ravines. Till then, however, some measures can be taken to stop further ravines being formed and to reclaim those which have already formed.

IN TABLELANDS

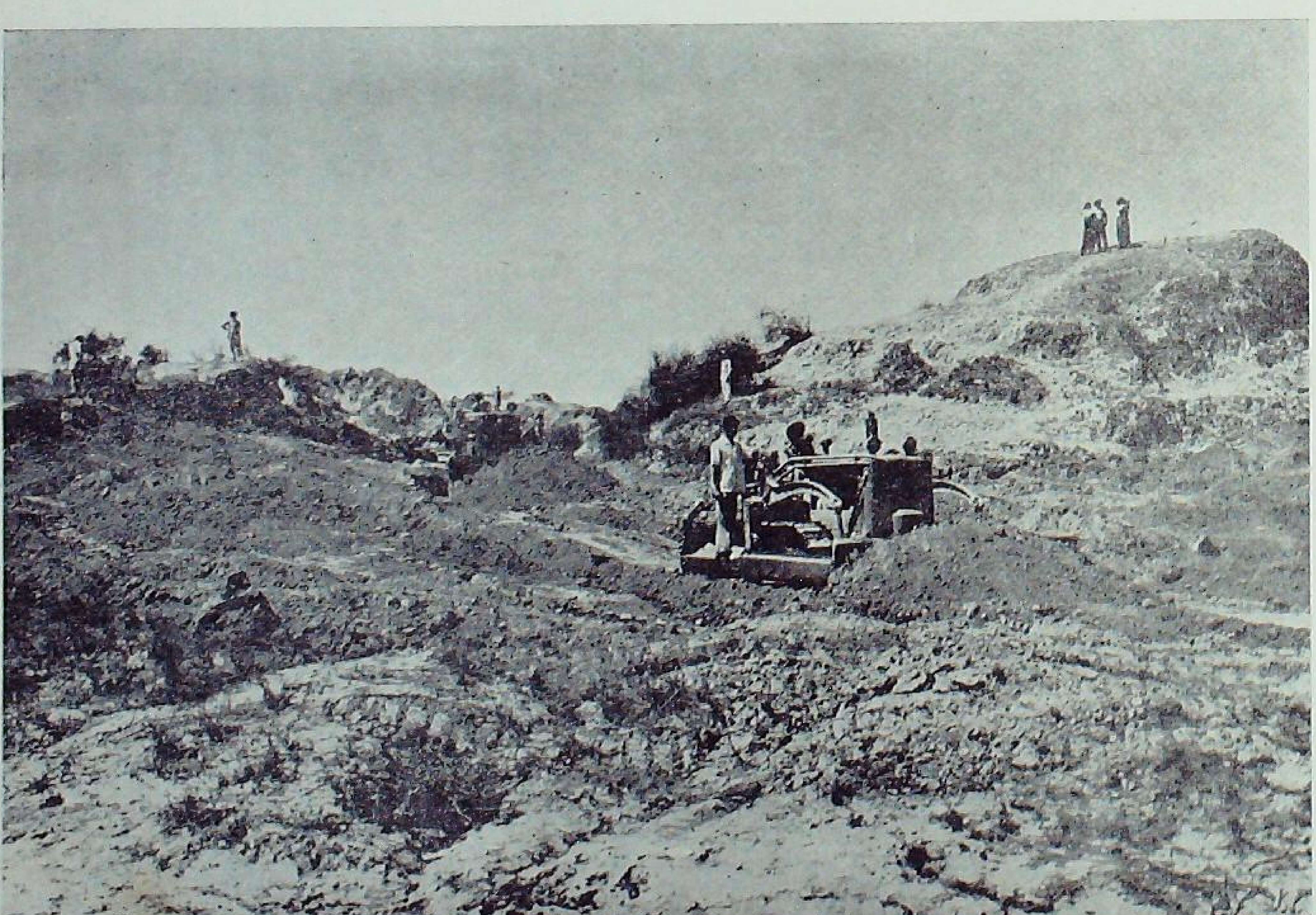
Areas which are suitable for farming in the water-shed should be protected against damage by 'run off' water. In such an area, which may be called the 'tableland,' contour bunding, contour farming, contour or strip cropping should be taken up. Again, cover crops and green manure crops should be grown, and these measures along with the application of fertilizers to the crops will help increase the capacity of the soil to absorb moisture and thus reduce the volume of 'run off' water.

IN MARGINAL LANDS

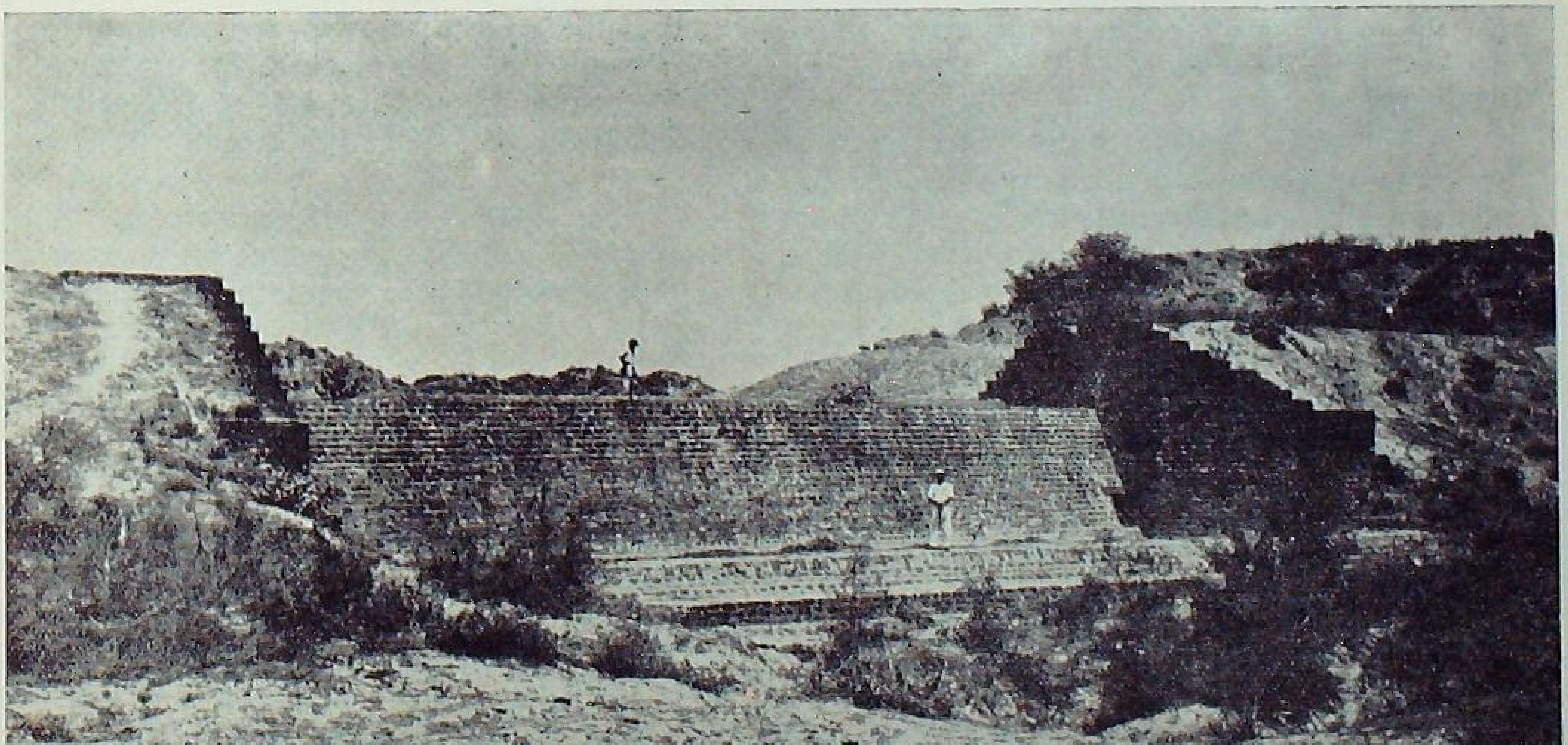
These are lands located inbetween the tablelands above and the ravine lands below. Such lands should be protected with bunds at the edge of the heads of the gullies. Such bunds make the 'run off' water move on to the protected waterways and do not allow the gullies to eat up more land.

Marginal lands are generally very uneven and are easily eroded. They should

In many places, bulldozers have already been set to work to reclaim ravines



Check dams—earthen (above) or of stone (below)—are necessary before any cultivation is taken up in ravines



Reclaiming ravines means more land for farm crops

be used for growing such trees as lemon and *ber*, where there is a good water supply, or for the growing of fodder or grasses.

IN RAVINES

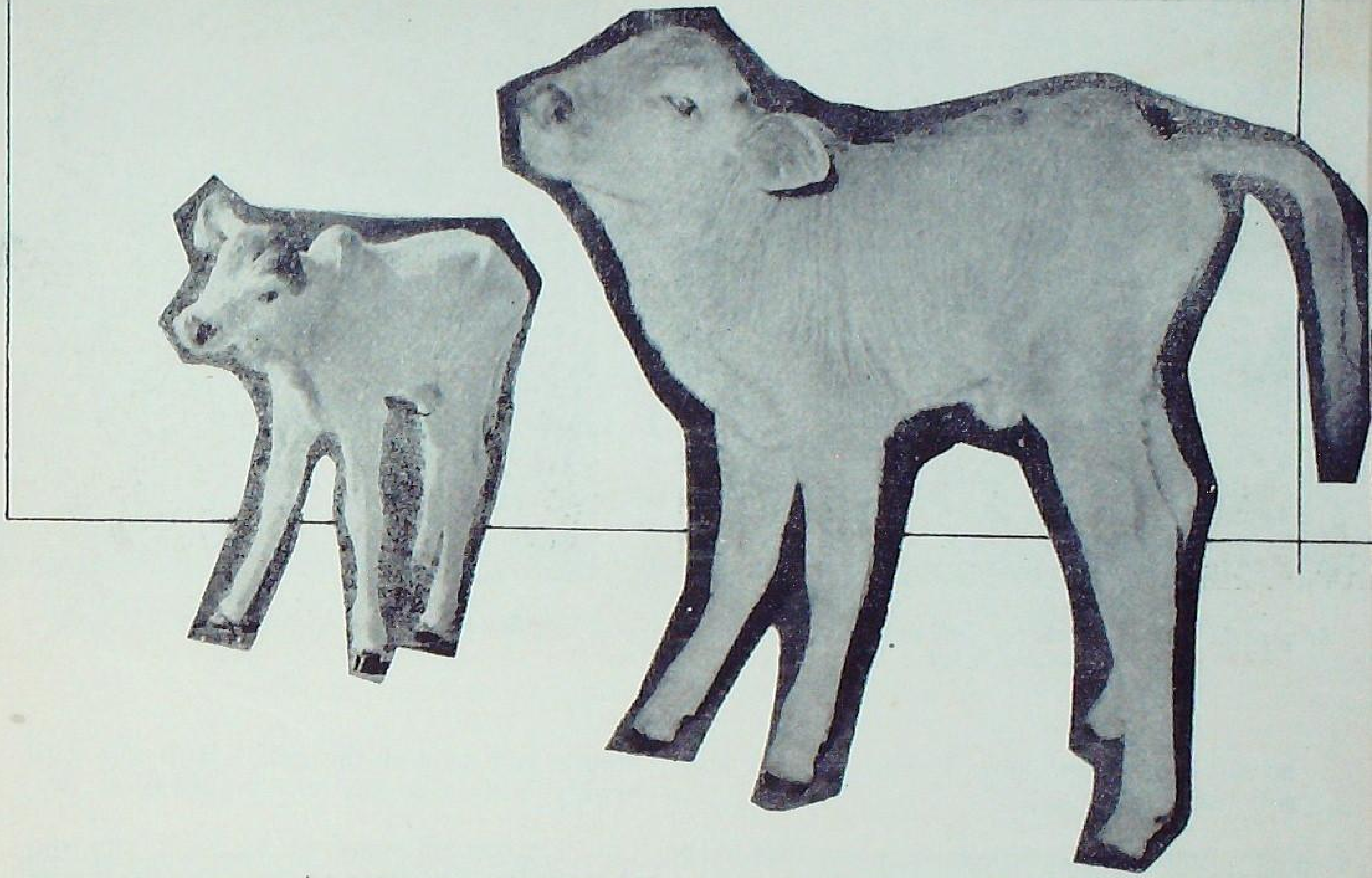
The area coming under ravines can be reclaimed for growing food-crops if the bed of the ravine is sufficiently wide. However, before cultivation is taken up, check dams and bench terraces should be constructed.

Check dams can be made of earth, 8 feet wide at the top and 10 feet high, with outlets to take out excess water, and a slope of 1½ feet to 1 foot on the sides, fully turfed. They can be built of stone masonry also. The check dams should be properly spaced, and the area inbetween levelled. The ravine sites may also be cultivated if they are not very steep. Good crops canthus be raised.

If the ravine is deep but narrow, it is best to close the area, so that nature may have a chance to rebuild herself. Such a ravine can also be put to forest trees and grasses. The head and sides of the gullies should be given a general slope to facilitate planting. Such plants as bamboos, *babul* and *neem* will do very well in these places. Information on the suitable trees and grasses for different areas can be had from the research stations.

The banks on either side of rivers should be planted with grasses and trees, so that the river flow is regulated to a certain extent.

Some State Governments give large blocks of ravines to individuals or cooperative societies on a long-term lease. If the land is reclaimed within a certain time, the lessee may keep the permanent right without occupancy charges. Thereafter, only assessments are charged on a sliding scale. This is a good way of reclaiming ravines through cooperative effort. Village *panchayats* can put ravines to fuel trees and other crops, and thus make it possible to reclaim such lands, which otherwise will be impossible for individuals to do.



Raise good calves

By HARBANS SINGH

THE calf of today is going to be the milch animal or bullock of tomorrow.

If you feed and rear the calf properly it will grow into a good milch animal or a good work bullock.

But many neglect the calf. That is why one out of every three calves born in our country dies before it is one year old. And those which live grow up into poor milch animals or bullocks.

If you are a cattle owner, here are some things you should follow in the rearing of your calves.

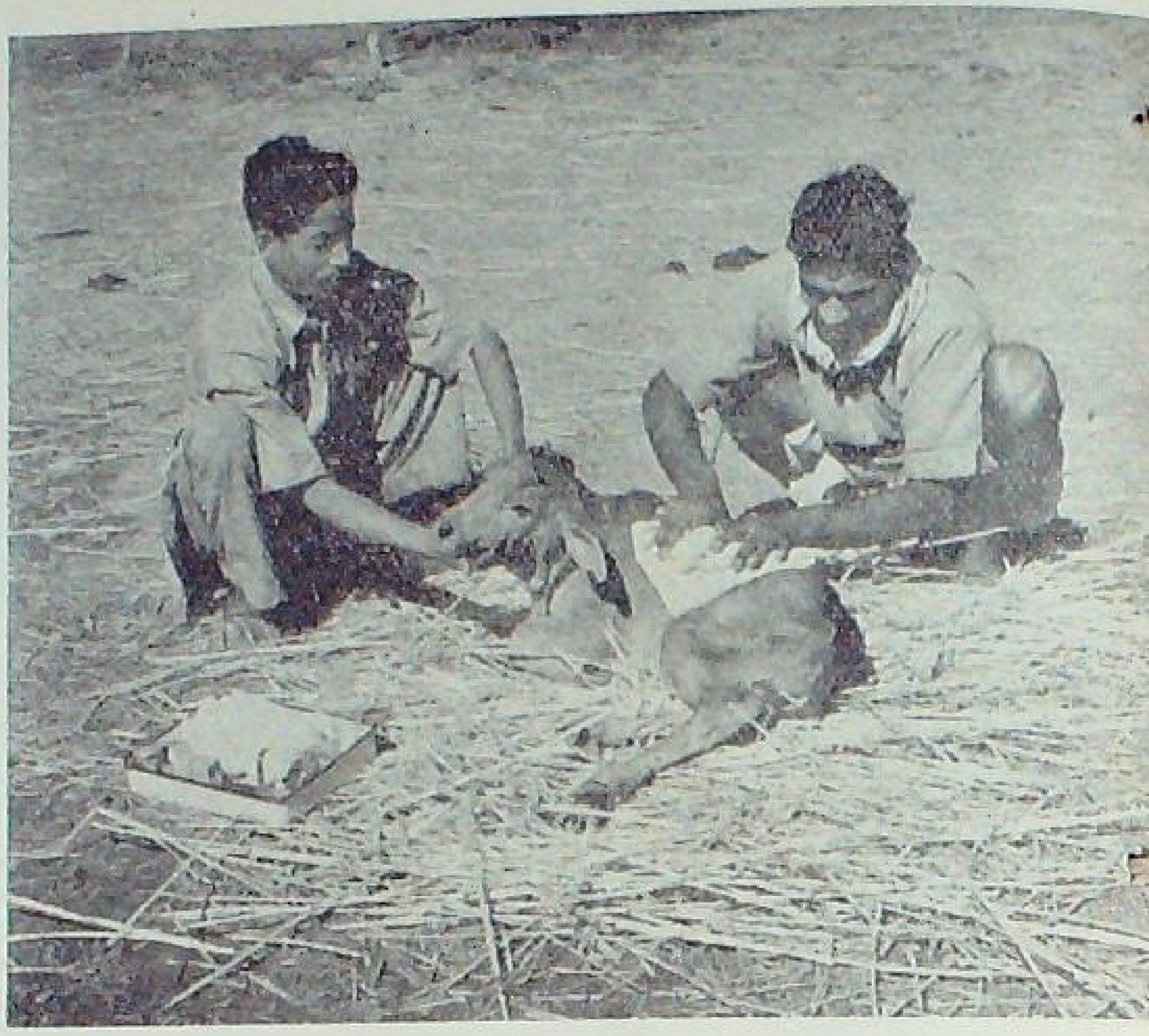
The care of the calf starts with the pregnant cow. If you look after her well, she will yield you a strong calf.

Stop milking the pregnant cow about six to eight weeks after calving. Given this rest, she will produce more milk after calving.

Also, do not allow the pregnant cow to walk long distances, run fast, or get frightened.

A week before calving, house her separately from the other animals. She will

Remove the mucus from the nose and mouth of the calf, if its mother doesn't lick it off



Rub the calf briskly with a gunny cloth next

be safe from being hurt. Provide a clean and soft bedding.

Before and after calving, give her light food which she can easily digest. After calving, gradually raise the ration, so that in 10 to 12 days she gets her normal food.

Don't forget to provide a 'salt lick' to her, so that she can lick it whenever she wants. If you can't get a salt lick, add a *chhatack* of salt to her feed.

AT CALVING

It is not good to interfere when the calving time comes Let nature do its work. However, get the Veterinary Doctor's help, if the cow has difficulty in calving.

Just before and after calving, give the cow a warm bran mash.

AFTER CALVING

As soon as the calf is born allow the cow to lick the calf. If she does not, remove the mucus (thin coating) from the mouth and nose of the calf. Rub the calf briskly with a gunny cloth until it is dry.

Let the calf stand up by itself and run about. If it does not, help it stand up. A healthy calf should be up in 20 to 30 minutes.

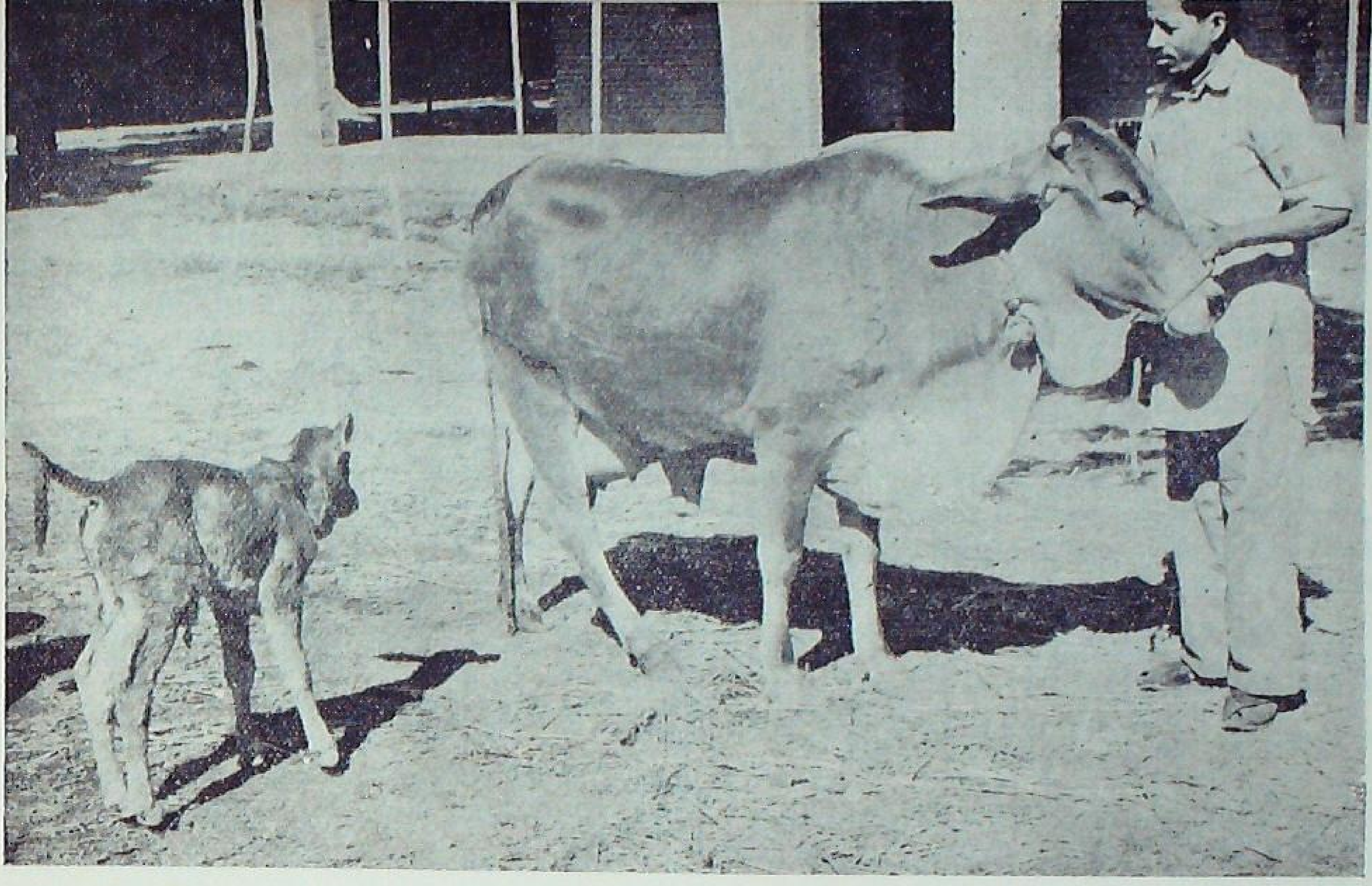
Wash the teats and the udder of the cow well. When dry, allow the calf to the teats. It is important that the calf gets the special kind of milk (colostrum) produced by the cow for the first four or five days.

Cut the navel chord of the calf an inch below the navel and tie it with a string. Apply tincture of iodine on and around the navel.

Watch for the falling-off of the after-birth. If it does not, even after some hours of calving, get the help of the Veterinary Doctor.

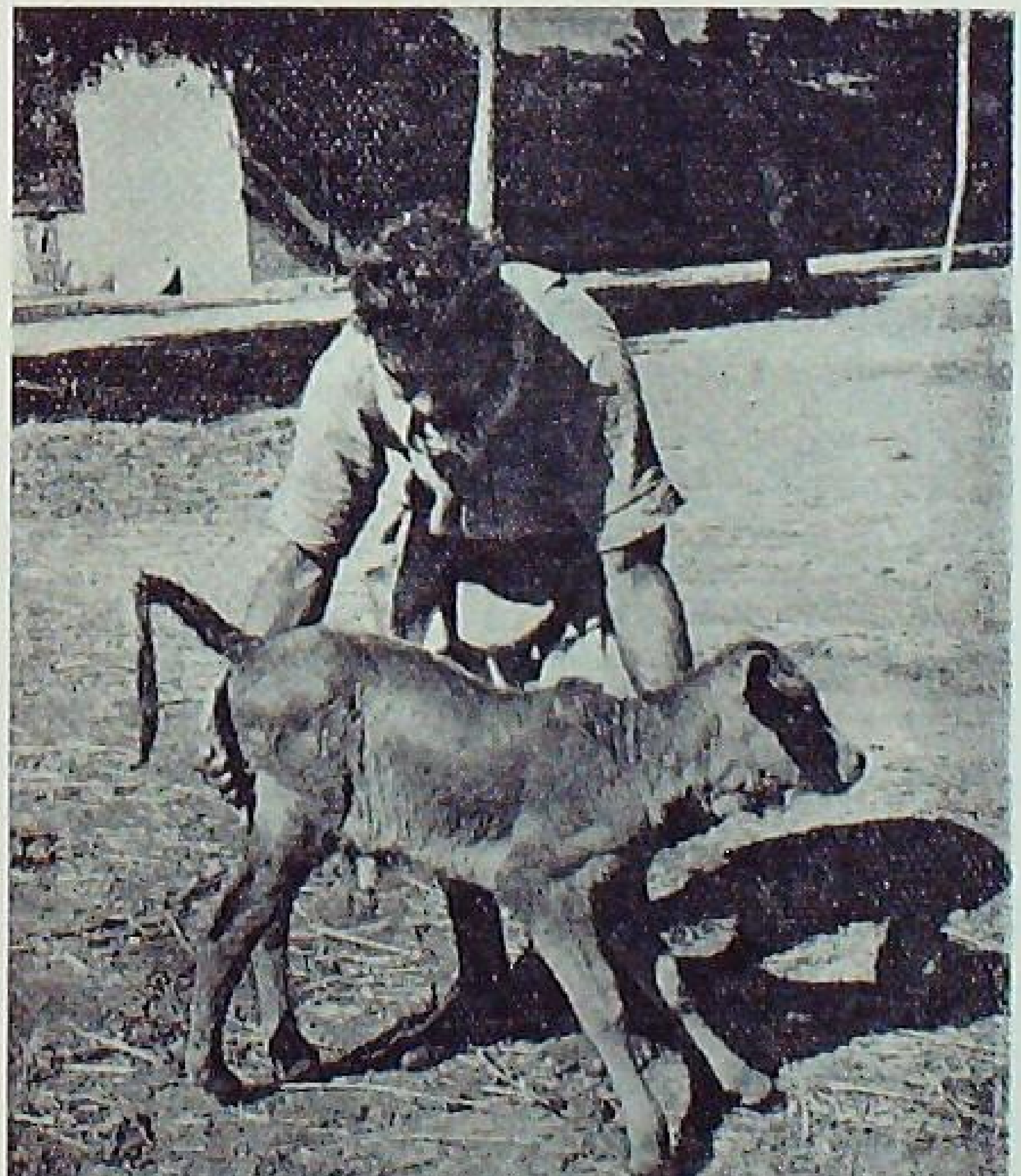
FEEDING THE CALF

You will be feeding the calf with colostrum for the first four or five days. If

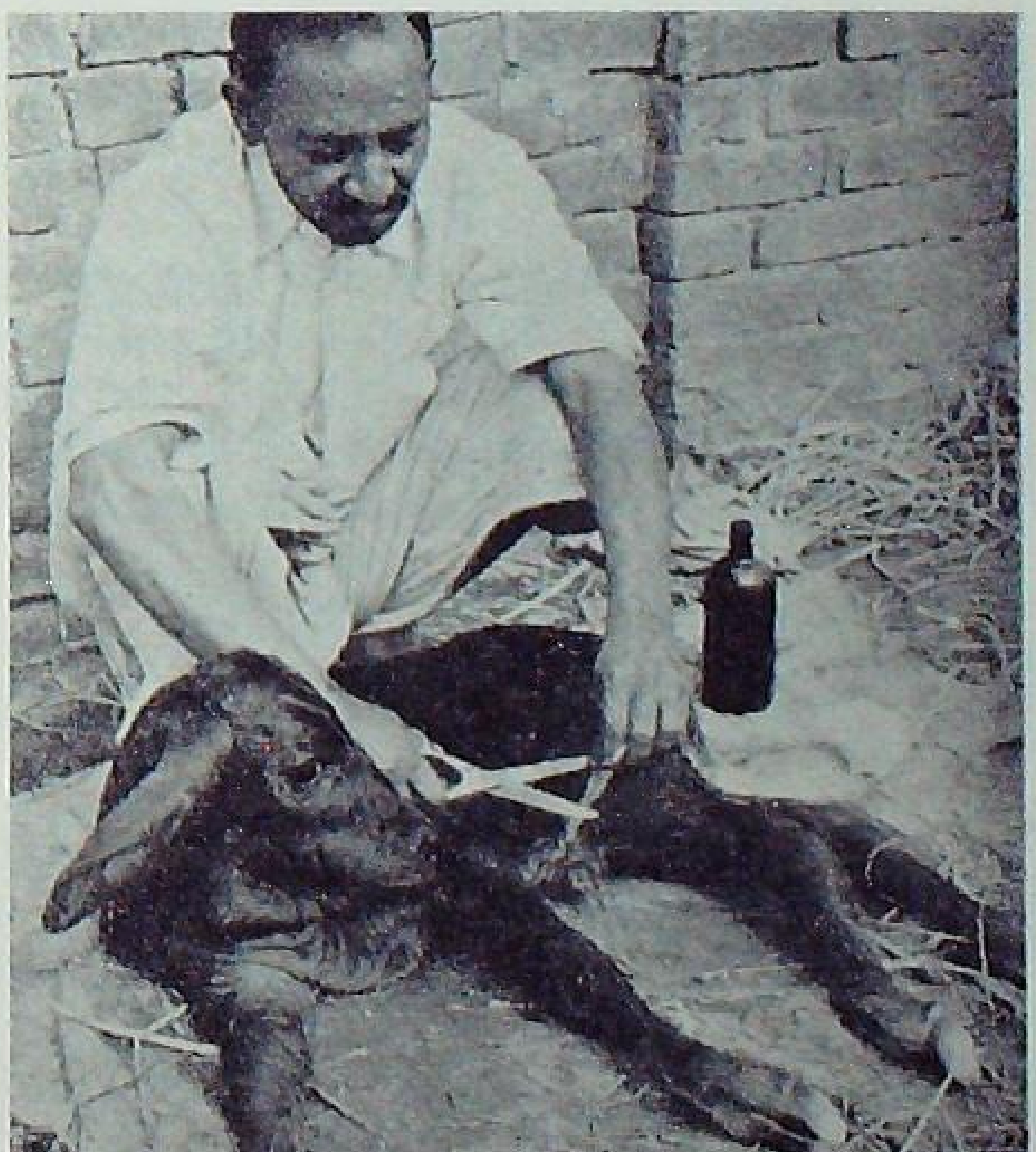


A healthy calf will not take more than 20 to 30 minutes to stand up after it is born

If it doesn't, help it stand up



Never forget to use tincture of iodine while cutting the navel chord



this be not available, give milk instead, to which you can add castor oil, cod liver oil and the white of an egg.

Feed the calf at intervals. Increase the quantity of feed gradually. Never overfeed the calf.

Let the calf nibble hay early. See that the hay you feed is of good quality. Don't give silage till it is at least two months old.

Start feeding concentrates when two to three weeks old, gradually increasing the quantity till at six months it gets about three pounds.

Here is a good concentrate mixture for your calf to feed on :

Wheat bran	30 parts
Linseed cake	10 ,,
Barley meal	20 ,,
Jowar meal	20 ,,
Maize meal	20 ,,

Provide a salt lick to the calf to lick at all times. Otherwise, add some (half a *chhatack*) salt to the grain mixture you give it.

Provide the calf with enough of fresh and clean water to drink.

CARE OF CALF

Don't let other animals butt the calf. House the calf in a clean, dry and well-ventilated place. Regularly disinfect the place with phenyl. In the cold season, cover the floor with straw to keep the calf warm.

Regularly exercise the calf as it grows up.

TAKE CARE OF AILMENTS

Even when a few days old, calves get a number of disorders. You can save them from death if you start treating them early.

Calves of all ages get 'white scour,' caused by germs. This is a digestive disorder, and brings in diarrhoea.

Dirty conditions in the shed, not feeding colostrum, want of vitamin A in the feed—all lead to white scour.

A calf with white scour gets fever, shows dullness, restlessness, and a dislike for food. Shortly, it starts purging a yellowish white liquid, which gives out a bad smell. Very soon, the calf becomes weak and is unable to stand. If the calf is quite young, it may die.

Diphtheria is another calf ailment. Germs entering the calf's mouth cause lesions. The calf gets fever, refuses food, shows dullness.

The inner lining of the mouth will be seen swollen. Saliva starts dripping from the mouth, the calf coughs and gives out a dirty yellowish discharge from the nostrils.

When the disease is severe, calves die in about four days.

'Navel ill' or 'joint illness' is yet another serious ailment of calves. In this, the navel gets swollen, and gives out a foul-smelling discharge. You may also notice fever, weakness and dullness in the calf. The joints may also get swollen, hot and painful.

Treat all these cases early. The Veterinary Doctor will tell you what treatment to follow.

Prevention, however, is always better than cure. This you can do by

providing the calf a clean, ventilated housing,

not overcrowding the calves in one place,

properly feeding the cow before calving,

treating the calf's navel with tincture of iodine soon after birth,

feeding the calf with colostrum,

feeding the calf with small quantities of feeds often, and not overloading it with food,

giving a spoonful of cod liver oil to the calf,

exercising the calf daily.

Also when you notice a calf suffering from any of these ailments,

keep the healthy calves away from the sick one;

use separate feeding utensils for the sick and healthy calves. Scald the utensils if possible after cleaning.

Go in for expert help from the Veterinary Doctor.

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Oilcakes in the Ration for Animals

A CERTAIN amount of oilcakes in the ration forms an excellent concentrate for animals. Too much of it, however, is not desirable. Because oilcakes in larger amounts cause constipation.

Normally the concentrate mixture for the growing and milch animals should contain oilcakes up to 40 per cent, the rest being made up of bran, cereals and pulses.

For draught animals, a mixture containing equal parts of *kulthi*, cotton-seed cake and groundnut cake, makes a good concentrate.

It is a good rule to feed two pounds of oilcakes to an adult animal per day. Where *til* or safflower cakes are used, the quantity may, however, be increased. Pregnant and younger animals should get smaller quantity of oilcakes.

It is advisable to exclude groundnut cake and cotton-seed cake from the diet of animals in advanced pregnancy.

Oilcakes used for feeding should be pure and fresh.

CORYZA IN CHICKENS IS TROUBLESOME

By N.S. GREWAL and S.G. IYER

MOST poultry farmers take care to see that their birds are fully protected against Ranikhet and tick fever, the deadly poultry diseases.

But they forget to pay the same attention to other respiratory diseases like infectious coryza, infectious bronchitis, infectious laryngotracheitis and the chronic respiratory disease, which can kill birds faster than Ranikhet or tick fever can.

Poultry-keepers know very little about these diseases. Alike in their symptoms these diseases produce in the birds, they are for convenience listed under the common name of coryza.

Coryza occurs commonly when the weather is damp and hot, and when there are sudden changes in temperature. The disease attacks chickens when they are 8 to 16 weeks old. Laying hens too are attacked, and when this happens, they turn out to be poor layers, and also spread the diseases to the chickens with which they come in contact.

Overcrowding of birds, poor or no ventilation in poultry houses, lack of green feed in the diet and presence of worms enable coryza to easily attack the birds.

SYMPTOMS

When coryza attacks birds, the upper respiratory tract gets swollen. There will be

a nasal discharge. The discharge persists for months.

When the disease is severe, the nasal discharge becomes thick and foul-smelling. Sometimes there is a bulging about the eyes. The deeper air passages may also be affected, when breathing becomes difficult and a rattling noise is produced. Birds shake their heads often to get out of the troubles that the mucus causes.

They lose appetite, lose weight and gradually die.

TREATMENT

When coryza appears in your flock, seek help from the nearest Veterinary Doctor. He will give an intramuscular injection of 0.2 gm. of dihydrostreptomycin sulphate to each bird, which he will repeat for two more days.

Feed your birds with a mash in which you have mixed sulphathiazole at seven ounces for every 100 pounds of the mash. Also give iodized water for them to drink.

You prepare iodized water by adding a teaspoonful of 'lugol' solution in a gallon of water (1/4 kerosene tinful). You prepare 'lugol' lotion by mixing an ounce of iodine with 1½ ounces of potassium iodide and 600 c.c. of water.

PREVENTION

As prevention is always better than cure, pay better attention to your flock.

*Don't overcrowd your birds.

*Look to ventilation and dampness; correct them if defective.

*Feed the birds with good quality greens.

*Feed the birds with antibiotics along with the feed. Ask your Veterinary Doctor what antibiotics to feed and how much.

EGG COLOUR

DOES the colour of an egg indicate the egg quality ?

Specialists say that egg colour has nothing to do with the egg quality. The colour of an egg is determined by the breed. A Leghorn, for example, will lay a white egg and a Rhode Island Red, brown. At the same time, it is not uncommon for a hen of a breed laying brown eggs normally, to lay a red coloured egg in the early laying period. If so, such eggs need not be rejected for hatching.

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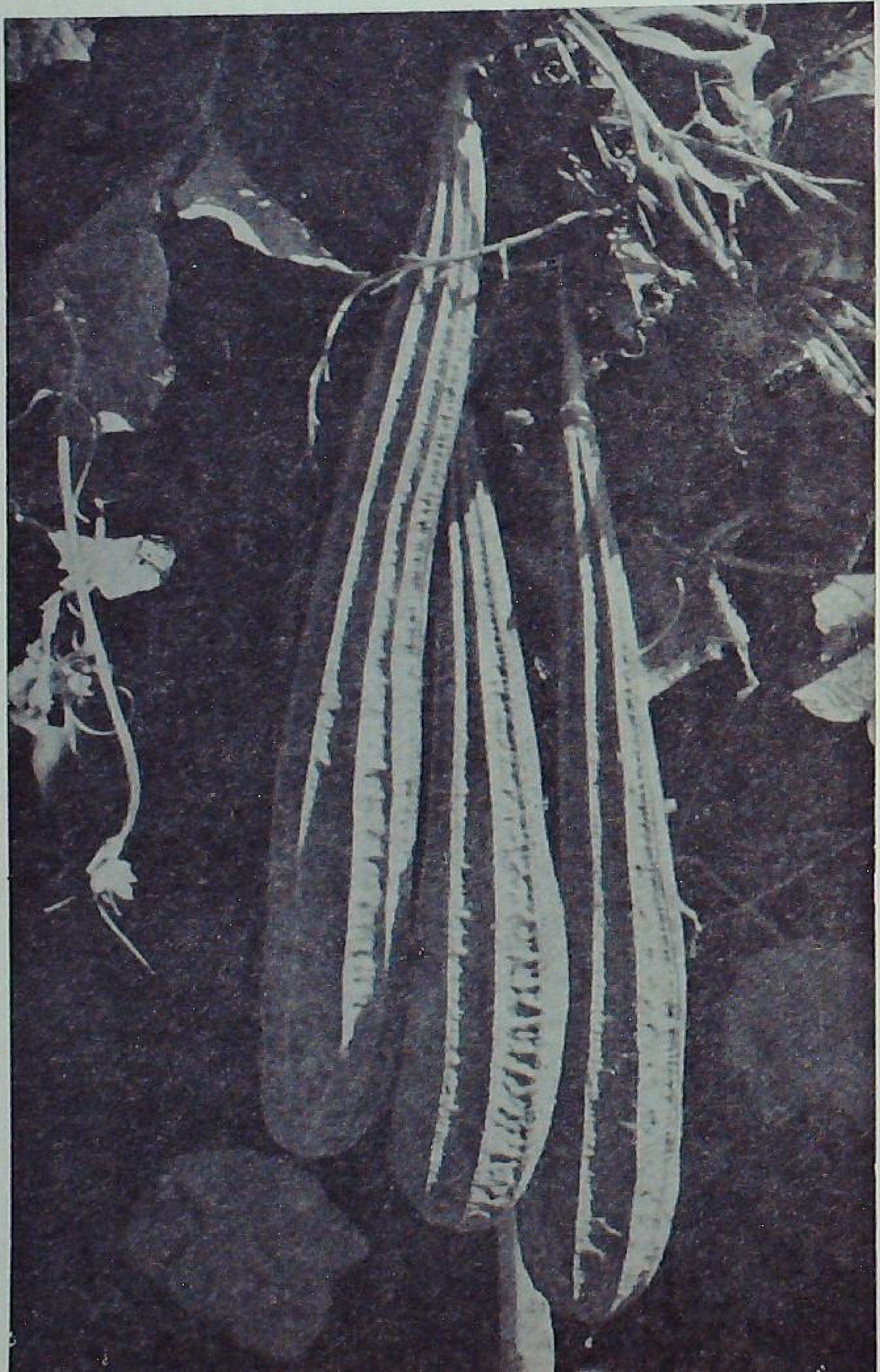
TIPS FOR KITCHEN-GARDENERS

By S. DHILLESWARA RAO



RIBBED GOURD

DURING summer, probably you have found flowers of ribbed gourd just withering and falling off. You get no fruit from such vines.

This is because the flowers don't get cross-pollinated by bees. When this happens, you have to help in pollinating the flowers. This is quite simple.

The vines open their flowers in the evenings, say between 5.30 and 6 o'clock. At this time, locate the male flowers first. Pluck them one by one. Remove the petals. You will see the stump full of pollen. Search out the female flowers, which you will find at the end of small green fruits. Gently rub the stub of the male flower on the stigma of the female flowers. Flowers thus treated set fruits.

KITCHEN WASTE

DON'T waste that kitchen waste. Have a pit, say three feet cube, dug near the kitchen in the backyard. Throw all the kitchen waste such as onion peels, vegetable scrappings or skins in the pit. Sprinkle some cowdung water on the day's waste thrown in ; cover with some ash and earth. Layer by layer the pit will thus fill up. In a few month's time, this will yield a good manure for your kitchen garden.

CROP PESTS AND DISEASES IN JULY

AND WHAT TO DO ABOUT THEM

By D. B. REDDY

DON'T take chances with pests and diseases ; check them before they do any damage to your crop. Here are some of the important ones which may attack your crop this month. For further information and details consult the local Agricultural Officer or the Gram Sevak.

Crop	*Pest/Disease*	*Control measures*
Citrus	Canker	Spray with 5 : 5 : 50 Bordeaux mixture or other copper fungicide.
Cotton	Angular leafspot or black arm	Treat seed before sowing with an organo-mercurial fungicide (1 per cent active material) at 1:250 parts by weight.
	Leaf roller Jassids White fly	Apply a combined spray of 0.1 per cent DDT and 0.1 per cent BHC (one pound of 50 per cent DDT wettable powder and one pound of 50 per cent BHC wettable powder in 50 gallons of water), or 0.02 per cent Endrin spray.
	Spotted boll worms	Spray 0.03 per cent Endrin or any other insecticide.
Jowar	Grain smut	Treat seed before sowing with fine sulphur dust at 1 : 250 parts by weight.
Maize	Leaf blight	Treat seed with an organo-mercurial fungicide (1 per cent active material) at 1:400 parts by weight.
	Stem borer	Spray 0.25 per cent DDT or 0.03 per cent Endrin.
Paddy	Foot-rot Helminthosporium Blast	Treat seed before sowing with an organo-mercurial fungicide (1 per cent active material) at 1:400 parts by weight.
	Helminthosporium Blast	Spray 3:3:50 Bordeaux mixture or a copper fungicide in case you have already sown the crop.
	Stem borer Hispa	Spray 0.02 per cent Endrin or Parathion.
	Armyworms	Dust 5 to 10 per cent BHC.
Sugarcane	Borers	Pull out the dead hearts and destroy them by burning. Spray 0.1 per cent Endrin or any other insecticide.
	Pyrilla	Dust 5 per cent BHC or use a spray of Endrin at the rate of 0.1 per cent actual material per acre.
Various crops	Grasshoppers Armyworms Hairy caterpillars	Dust 5 to 10 per cent BHC or use other insecticides.

Some of the pesticides like Endrin, Parathion and organo-mercurial fungicides are very poisonous and should be handled and used with great care.

What to do and how to do it in your orchard in July

While you are harvesting some fruits, you should also be planting new ones this month in your orchard

By DALJIT SINGH

HIMALAYAN TEMPERATE REGION

States : Parts of Assam, Kumaon Hills (Uttar Pradesh), Himachal Pradesh, Punjab Hills, Kulu Valley and Kashmir Valley.

You will be harvesting fruits of early varieties of apples and pears and late varieties of peaches and apricots.

You should also :

Prune off infected spurs and cankered branches to control the brown rot disease ; remove all affected fruits and bury them.

Control weeds by interculture.

Drain off surplus rain water.

Continue budding of peach stocks in peach orchards ; sow a suitable cover crop for green manuring.

NORTHERN DRY REGION

States : Plains of the Punjab, the western districts of Uttar Pradesh, western Madhya Pradesh and Rajasthan.

You will be removing the shade provided to nursery plants in summer and planting new fruit plants in the pits dug in May.

You should also :

Sow seeds of *desi* mangoes for stocks and also of guava, *kaghzi* lime, *phalsa* and papaya.

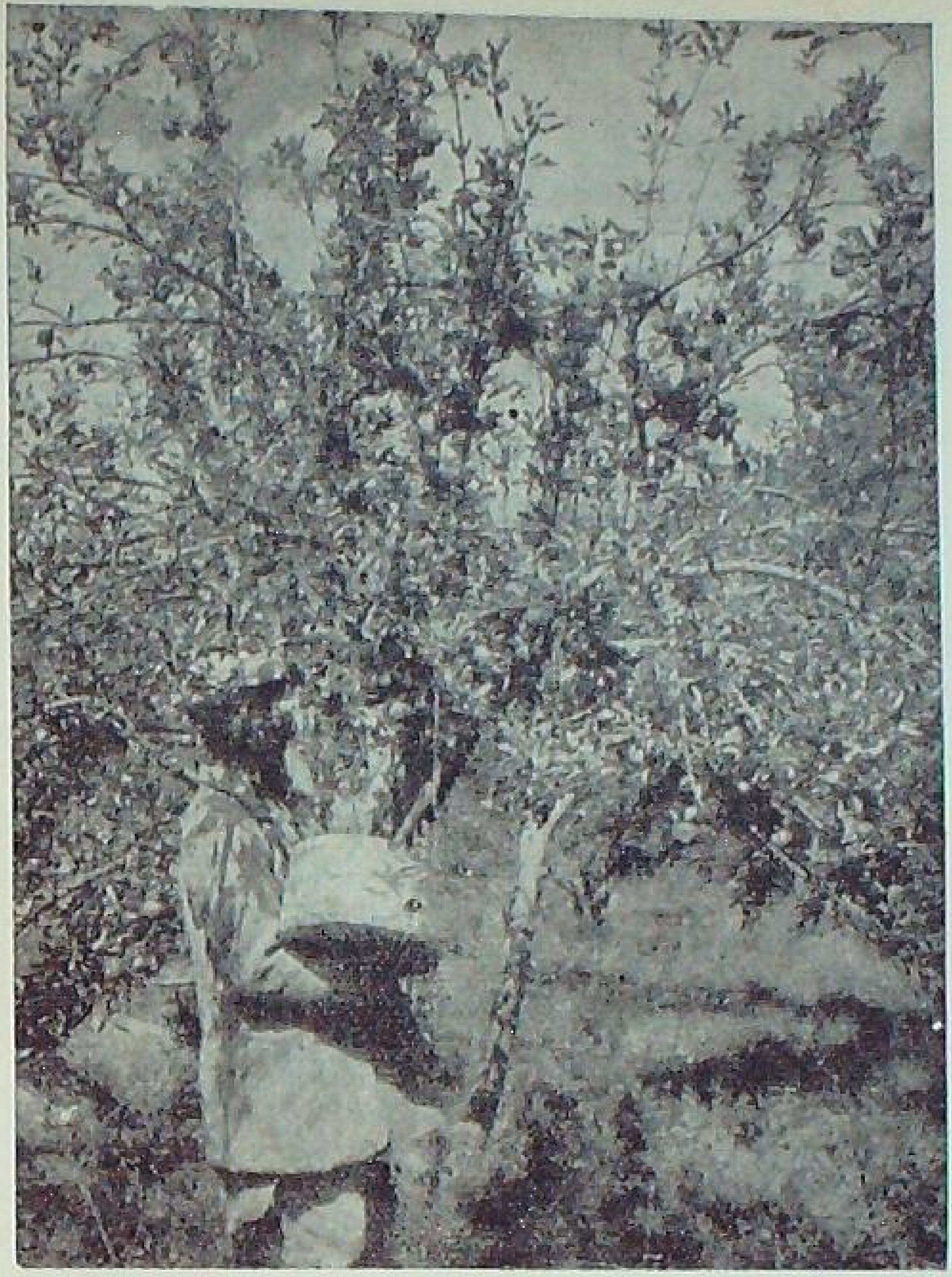
Graft mangoes, guavas and loquats and do air-layering of lemon, litchi and figs.

Spray Bordeaux mixture (2:2:50) for controlling citrus canker.

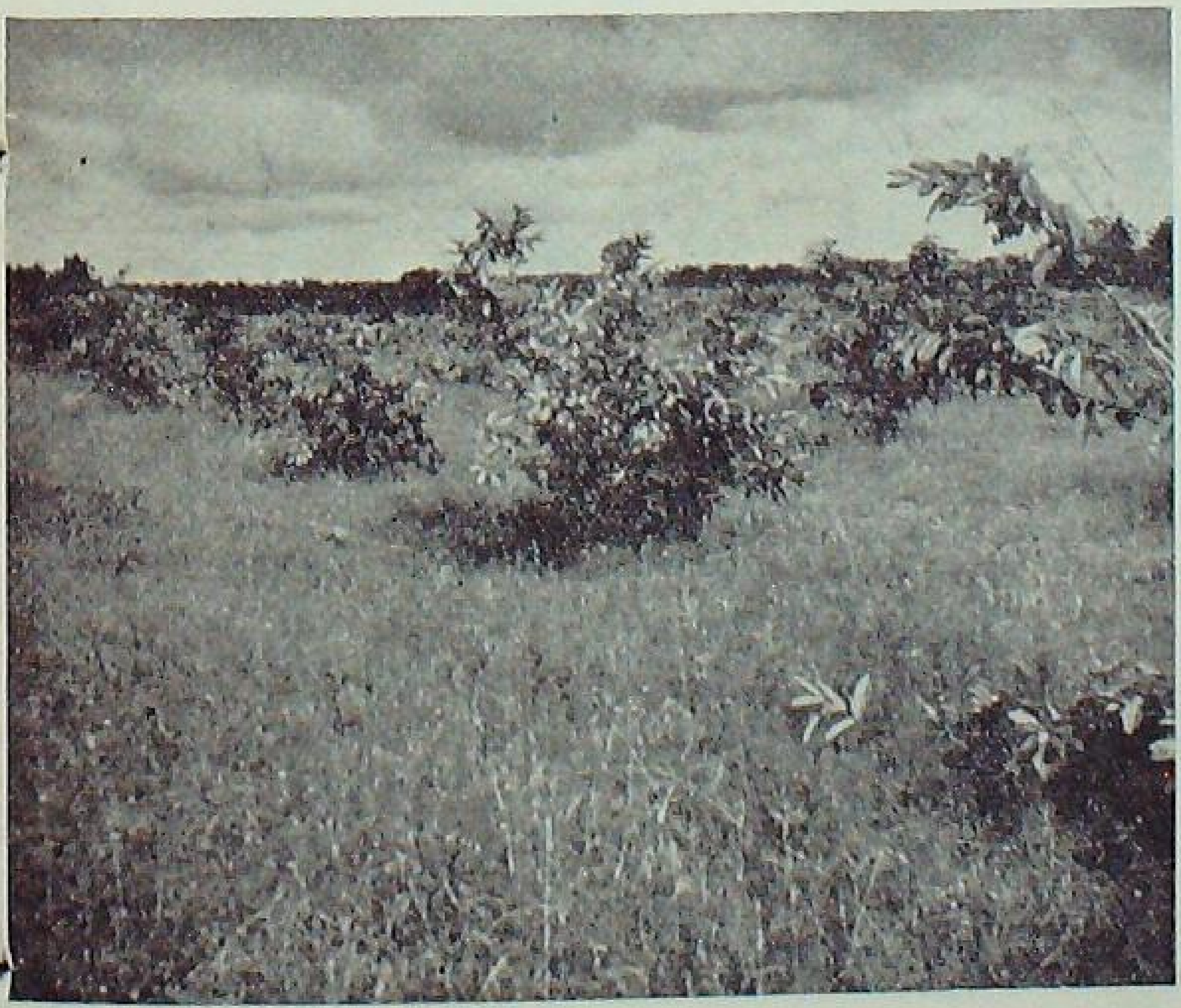
EASTERN WET REGION

States : Southern parts of Assam, West Bengal, Bihar, Orissa, eastern Madhya Pradesh, eastern Uttar Pradesh and north-east Andhra Pradesh.

You will be completing the sowing of papaya seeds in the seed-beds and harvesting of jackfruit. You will also start planting of pineapple ratoons



Apple-picking time !
But think also of raising a
green manure crop in your fruit orchard



and suckers in the field and planting of fresh orchard trees.

You should also take up :

inarching of jackfruit seedlings ;

weeding of fruit orchards ;

ploughing and burying of leguminous crops in the orchards ;

air-layering of litchi.

SOUTHERN REGION

States : Southern districts of Madhya Pradesh, western Andhra Pradesh and Madras, eastern parts of Mysore, Maharashtra and Gujarat, and Madhya Pradesh.

You will be removing the shade provided to the plants in summer and planting new orchard trees; also continuing sowing of green manure crops.

You should also :

transplant *phalsa* seedlings ;

dig out trenches and drain out excess rain water ;

graft mangoes and sapotas;

control rhinoceros beetle on coconuts.

COASTAL REGION

States : Strips bordering the Eastern and Western Ghats, parts of Mysore, Madras and Kerala.

You will start harvesting mangosteens.

You should also :

thin out weak cashewnut seedlings;

inarch or sidegraft two-year old mangosteen plants ;

transplant seedlings of mangosteen in nursery beds to harden the plants.

Anyone can make this

REFRIGERATOR

By KAMLESH PURI

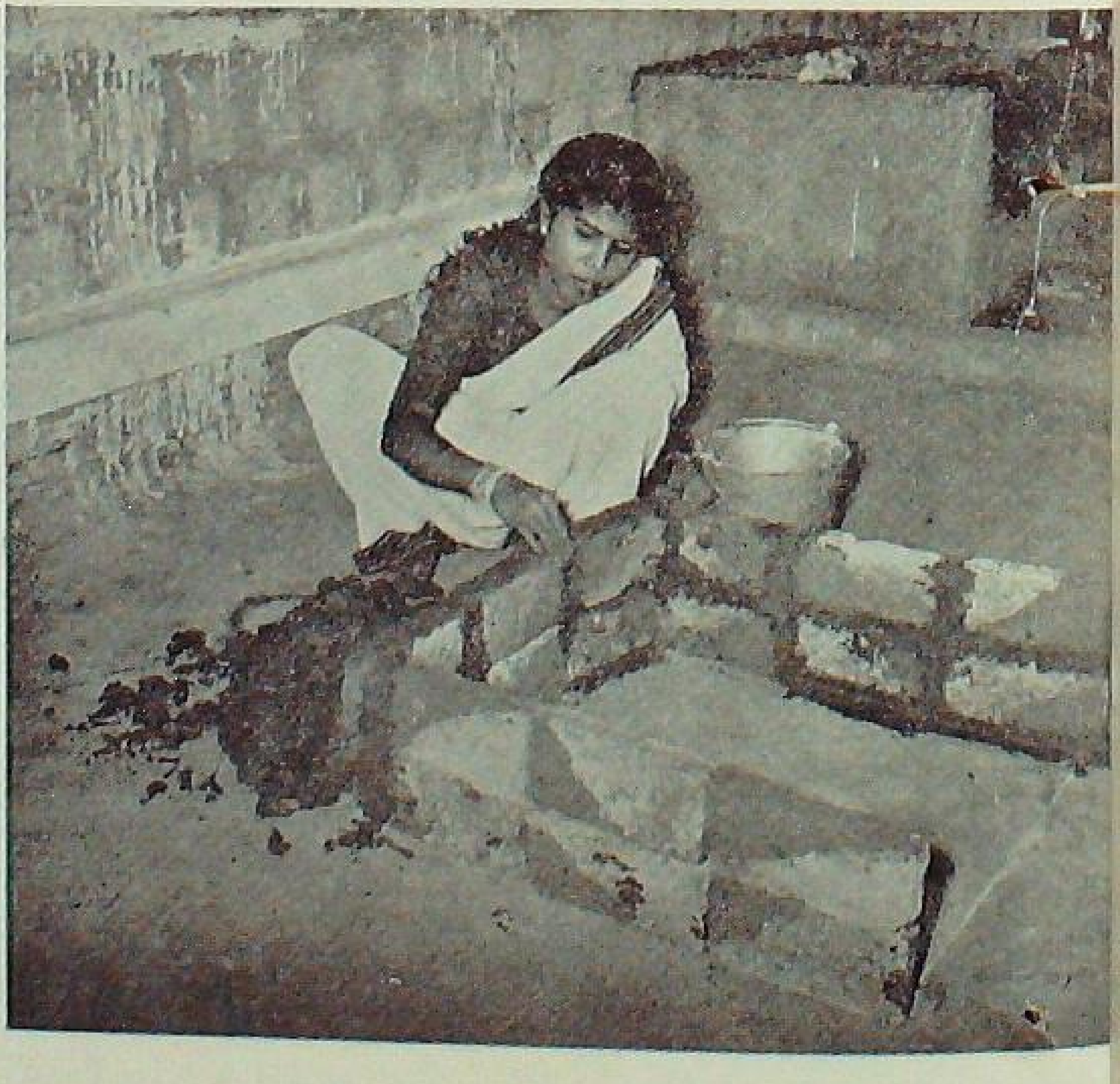
THE summer brings to you as to many housewives the problem of storing foods such as vegetables. The hot winds make them wither and dry. Many foods get spoiled and are totally lost.

The people's or *janata* refrigerator is what you need. It occupies but only a small space in the kitchen, and can keep your vegetables, fruits, milk and other foods fresh and good for long periods. And what's more this refrigerator can be made by you, right in the kitchen!

All you need is :

(1) A newly-baked porous clay basin (size depending upon the needs of your

↑ *Take a newly-baked porous clay basin of a suitable size, choose a suitable place for the refrigerator in the kitchen, and place the basin there. Mark one foot square around it*



→ *Build a 12-inch high brick wall along the marking*

family).

(2) Two shallow, loosely-knit bamboo baskets that can just fit into the basin.

(3) A piece of old gunny.

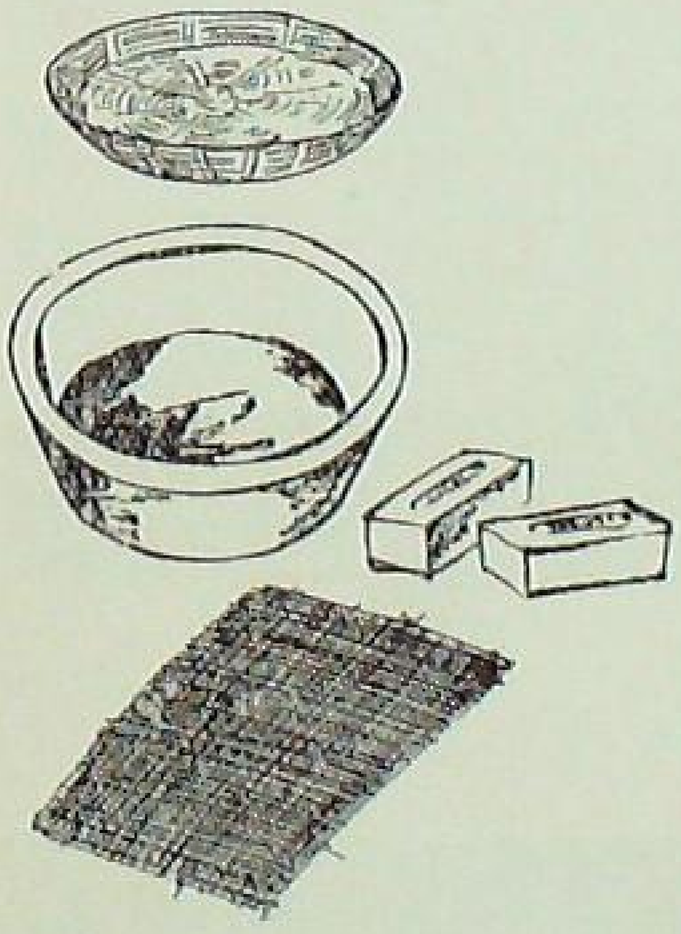
(4) A few bricks.

(5) Rough (river) sand, some mud and water.

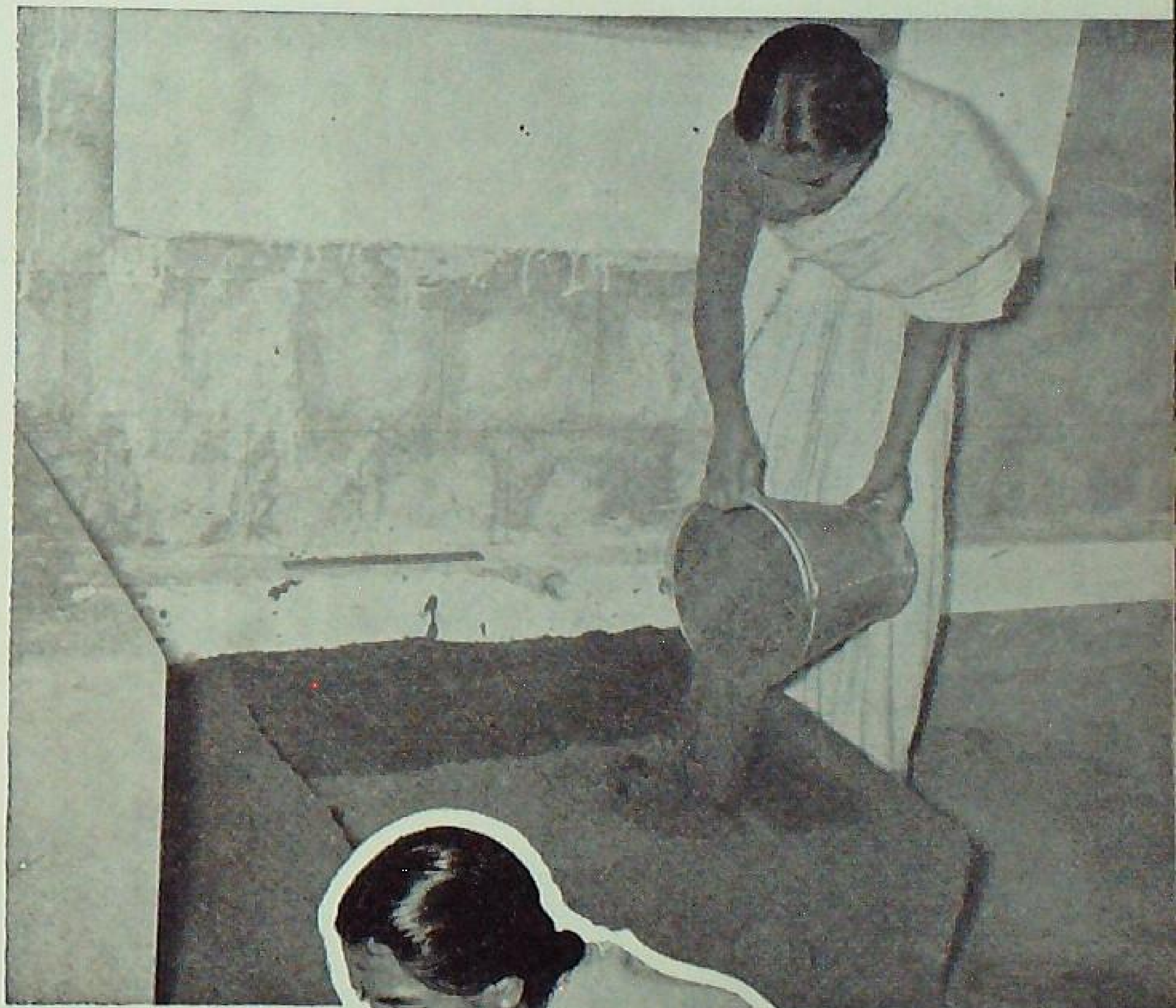
And this is how you build the refrigerator.

(1) Select a suitable place in the kitchen, as far away from the *chulha* as possible, for the refrigerator.

(2) Place the clay basin in the centre and mark out one foot square round it. Remove the basin.



↑ *Plaster with cowdung and clay mud*



Fill rough river sand in the place enclosed by the wall to a quarter of its height

↑ *Place the basin inside*

↓ *Fill up to half the height with sand*

(3) Build a small brick wall along the marking about 12 inches high.

(4) Steep some clay in water overnight. Add a little hay and cowdung and mix well.

(5) Smear the brick wall with a thick layer of the mud mixture. Let it dry thoroughly.

(6) Fill the space enclosed by the mud walls with coarse

sand to about a fourth of the height of the wall and level it.

(7) Place the clay basin in the centre of the square and fill the remaining space with more sand, so that the square is almost half full.

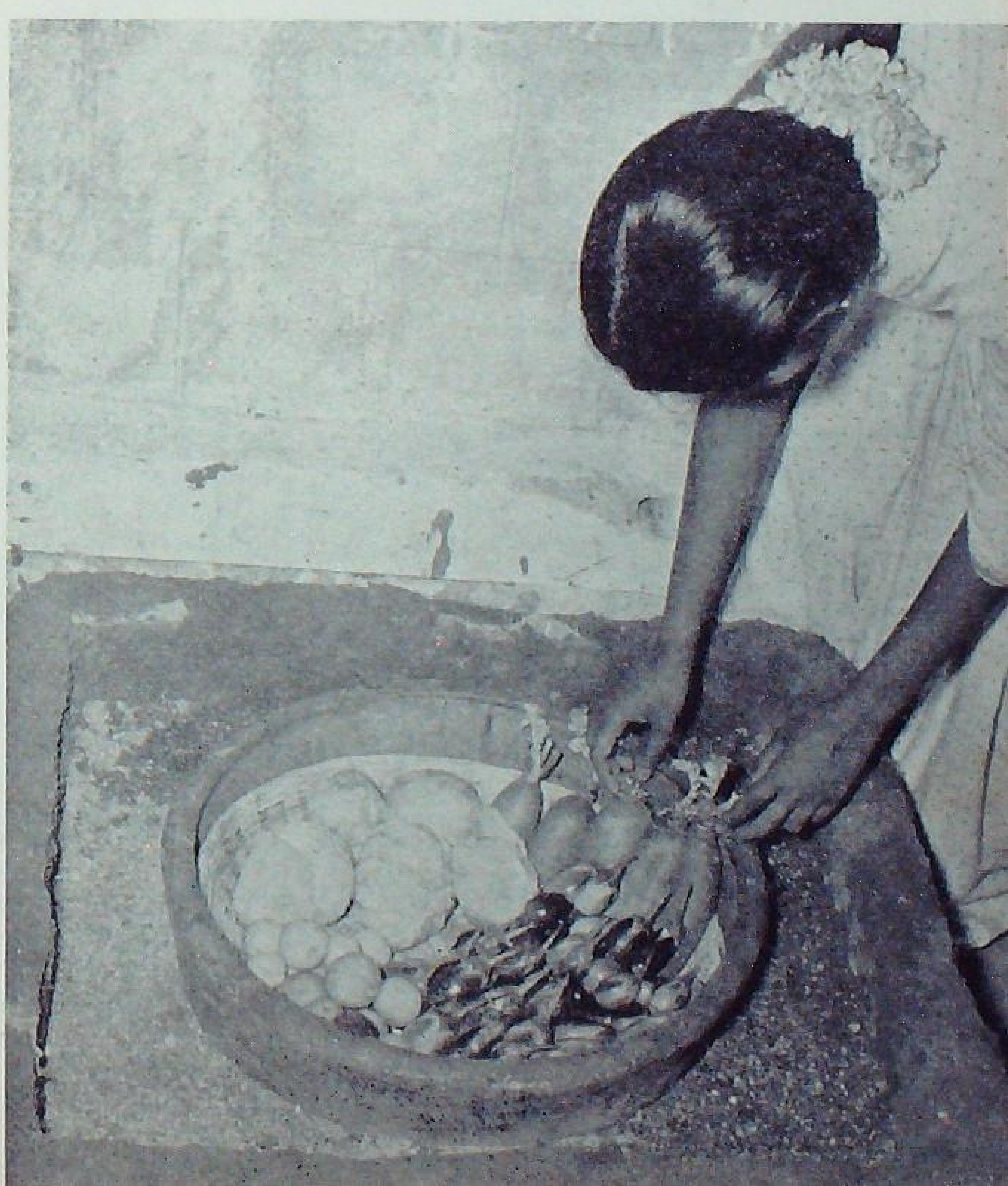
(8) Sprinkle water all over the basin and the sand, so that they are moderately wet. This water will evaporate in course of time, making the inside of the basin cool. Always maintain this moisture.

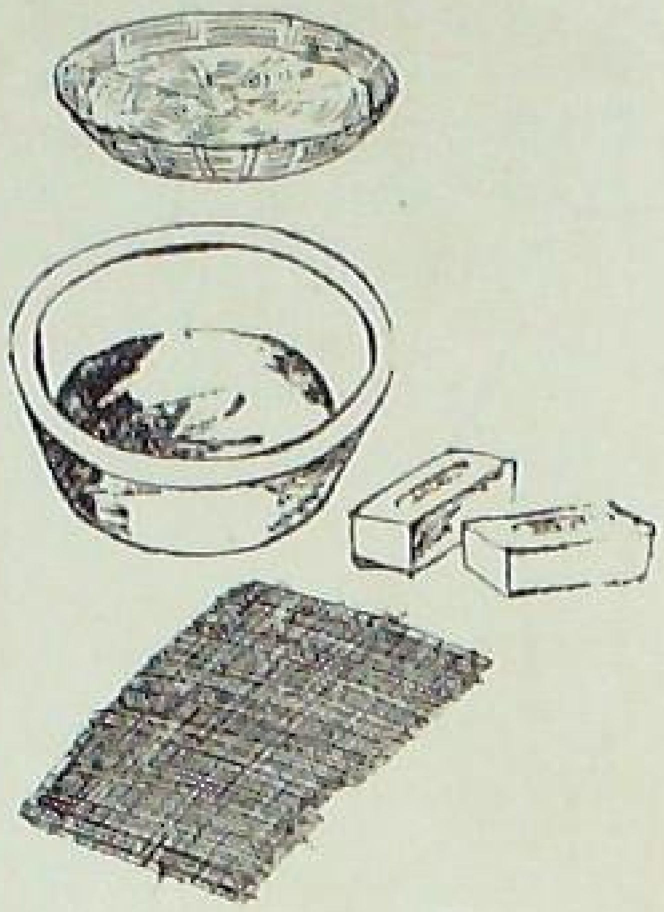
(9) Place one of the baskets in the basin, and

← *Sprinkle water*

→ *Place a bamboo basket in the basin*

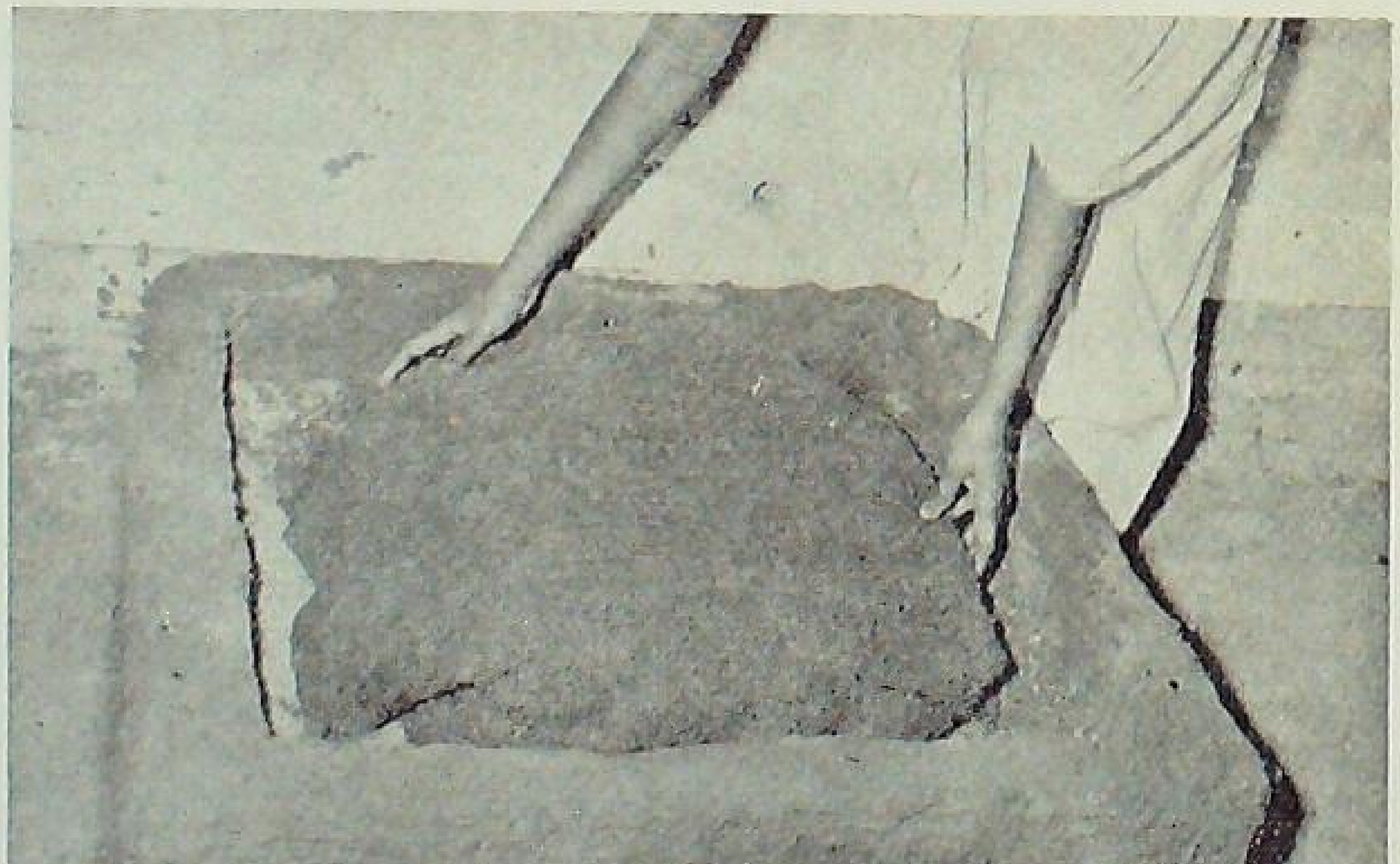
Put in the vegetables
↓ *you want to preserve*





↑ *Cover with another bamboo basket*

Put a wet gunny cloth over it. The
↓ vegetables will remain fresh for a week



arrange in it the fruits and vegetables you wish to preserve.

(10) Cover the vegetables and fruits with the other basket.

(11) Cover the basket with a wet gunny cloth, and now your fruits and vegetables will keep fresh for nearly a week.

The author gratefully acknowledges the help rendered by Miss Seethalakshmi, Chief Instructress, Home Science Wing, Rajendra Nagar, Hyderabad and the trainees of the Wing for arranging the demonstration on how to make a Janata Refrigerator. Pictures by Rajender Paul

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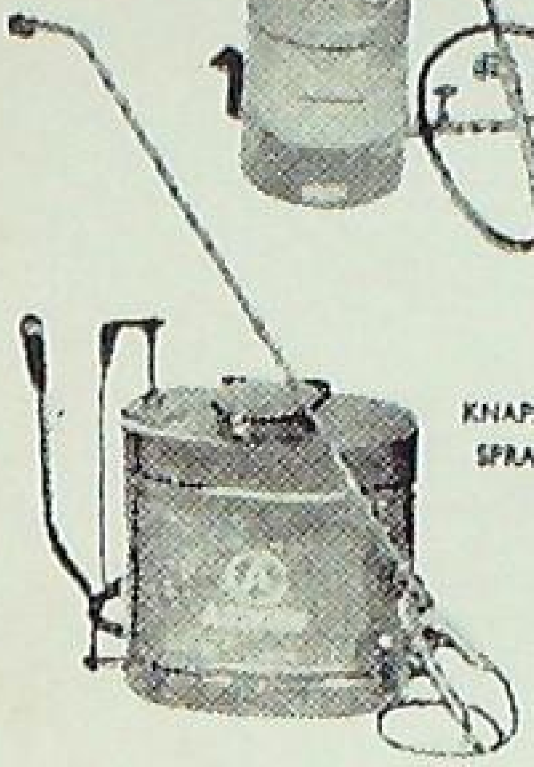

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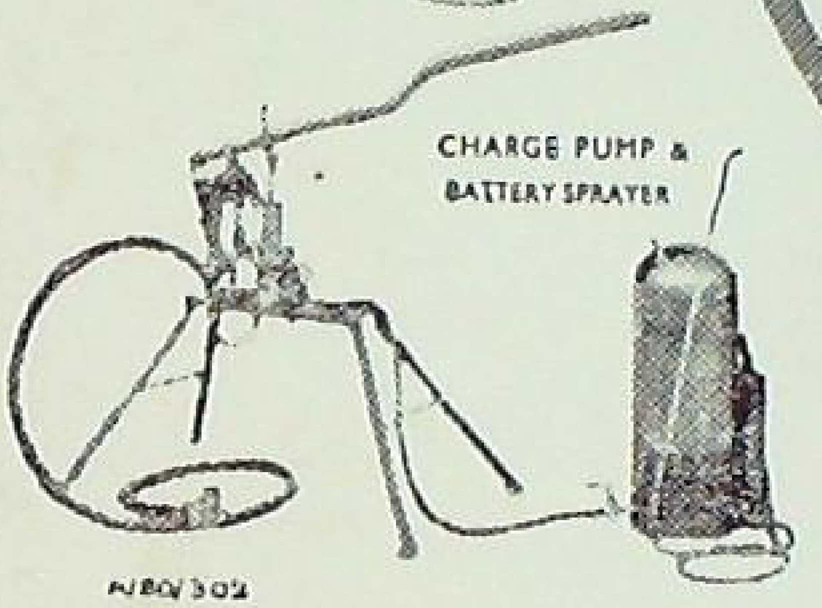

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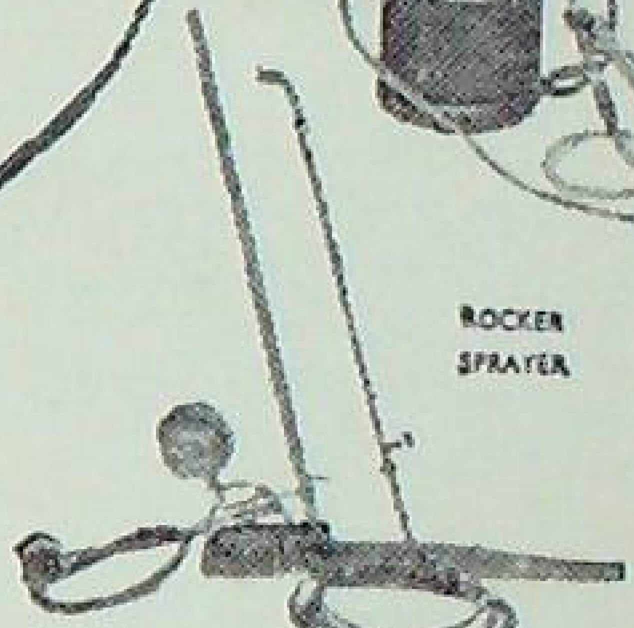
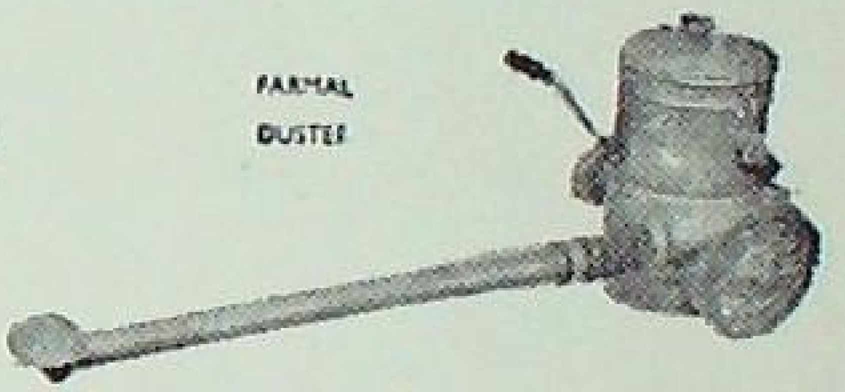


ROCKER SPRAYER



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